Complete Summary

GUIDELINE TITLE

Guideline on antibiotic prophylaxis for dental patients at risk for infection.

BIBLIOGRAPHIC SOURCE(S)

American Academy of Pediatric Dentistry Clinical Affairs Committee, American Academy of Pediatric Dentistry Council on Clinical Affairs. Guideline on antibiotic prophylaxis for dental patients at risk for infection. Pediatr Dent 2008-2009;30(7 Suppl):215-8. [17 references] PubMed

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: American Academy of Pediatric Dentistry (AAPD). Clinical guideline on antibiotic prophylaxis for dental patients at risk for infection. Chicago (IL): American Academy of Pediatric Dentistry (AAPD); 2005. 3 p. [6 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Bacteremia-induced infections, including infective endocarditis, following dental procedures

GUIDELINE CATEGORY

Management
Prevention

CLINICAL SPECIALTY

Dentistry
Pediatrics
Preventive Medicine

INTENDED USERS

Dentists

GUIDELINE OBJECTIVE(S)

To help practitioners make appropriate decisions regarding antibiotic prophylaxis for dental patients at risk for bacteremia-induced infection

TARGET POPULATION

Pediatric patients with medical conditions that predispose them to bacteremia-induced infections following dental procedures, including patients with cardiac conditions, patients with compromised immunity, and patients with shunts, indwelling catheters, or medical devices

INTERVENTIONS AND PRACTICES CONSIDERED

1. Antibiotic prophylaxis for patients undergoing dental procedures
2. Consultation for management of some implanted devices

MAJOR OUTCOMES CONSIDERED

Incidence of bacteremia-induced infection

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

A MEDLINE search was performed using the keywords "infective endocarditis" (IE), "bacteremia", "antibiotic prophylaxis", and "dental infection".

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Not stated

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Not applicable

METHODS USED TO ANALYZE THE EVIDENCE

Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Clinical guidelines of the American Academy of Pediatric Dentistry (AAPD) are developed under the direction of the Board of Trustees, utilizing the resources and expertise of its membership operating through the Council on Clinical Affairs (CCA).

Proposals to develop or modify guidelines may originate from 4 sources:

1. The officers or trustees acting at any meeting of the Board of Trustees
2. A council, committee, or task force in its report to the Board of Trustees
3. Any member of the AAPD acting through the Reference Committee hearing of the General Assembly at the Annual Session
4. Officers, trustees, council and committee chairs, or other participants at the AAPD's Annual Strategic Planning Session

Regardless of the source, proposals are considered carefully, and those deemed sufficiently meritorious by a majority vote of the Board of Trustees are referred to the CCA for development or review/revision.

Once a charge (directive from the Board of Trustees) for development or review/revision of a clinical guideline is sent to the CCA, it is assigned to 1 or more members of the CCA for completion. CCA members are instructed to follow the specified format for a guideline. All clinical guidelines are based on 2 sources of evidence: (1) the scientific literature; and (2) experts in the field. Members may call upon any expert as a consultant to the council to provide expert opinion. The Council on Scientific Affairs provides input as to the scientific validity of a guideline.

The CCA meets on an interim basis (midwinter) to discuss proposed clinical guidelines. Each new or reviewed/revised guideline is reviewed, discussed, and confirmed by the entire council.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Comparison with Guidelines from Other Groups
Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Once developed by the Council on Clinical Affairs (CCA), the proposed guideline is submitted for the consideration of the Board of Trustees. While the board may request revision, in which case it is returned to the council for modification, once accepted by majority vote of the board, it is referred for Reference Committee hearing at the upcoming Annual Session. At the Reference Committee hearing, the membership may provide comment or suggestion for alteration of the document before presentation to the General Assembly. The final document then is presented for ratification by a majority vote of the membership present and voting at the General Assembly. If accepted by the General Assembly, either as proposed or as amended by that body, the document then becomes the official American Academy of Pediatric Dentistry (AAPD) clinical guideline for publication in the AAPD's Reference Manual and on the AAPD's Web site.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The conservative use of antibiotics is indicated to minimize the risk of developing resistance to current antibiotic regimens. Given the increasing number of organisms that have developed resistance to current antibiotic regimens, it is best to be prudent in the use of antibiotics for the prevention of infective endocarditis (IE) and other conditions.

Patients with Cardiac Conditions

Dental practitioners should consider prophylactic measures to minimize the risk of IE in patients with underlying cardiac conditions. These patients and/or parents need to be educated and motivated to maintain personal oral hygiene through daily plaque removal, including flossing. Greater emphasis should be placed on improved access to dental care and oral health in patients with underlying cardiac conditions at high risk for IE and less focus on a dental procedure and antibiotic coverage. Professional prevention strategies should be based upon the individual's assessed risk for caries and periodontal disease.

Specific recommendations from the 2007 American Heart Association (AHA) guideline on prevention of IE are included in the tables below. The AHA recommends antibiotic prophylaxis only for those whose underlying cardiac conditions are associated with the highest risk of adverse outcome (see Table 1 below). Such conditions include prosthetic heart valves, previous history of IE, unrepaired cyanotic congenital heart disease (CHD), completely repaired congenital heart defect with prosthetic material or device during the first 6 months after the procedure, repaired CHD with residual defects at the site or adjacent to the site of a prosthetic patch or device, and cardiac transplantation recipients who develop valvulopathy. In addition to those diagnoses listed in the AHA guidelines, patients with a history of intravenous drug abuse may be at risk for developing bacterial endocarditis due to associated cardiac anomalies. Consultation with the patient's physician may be necessary to determine susceptibility to bacteremia-induced infections.

Antibiotics are recommended for all dental procedures that involve manipulation of gingival tissue or the periapical region of teeth or perforation of the oral mucosa (see Table 2 below). Specific antibiotic regimens can be found in Table 3 in the original guideline document. Practitioners and patients/parents can review the entire AHA guidelines http://circ.ahajournals.org/cgi/reprint/CIRCULATIONAHA.106.183095 for additional background information as well as discussion of special circumstances (e.g., patients already receiving antibiotic therapy, patients on anticoagulant therapy).

Patients with Compromised Immunity

Patients with a compromised immune system may not be able to tolerate a transient bacteremia following invasive dental procedures. This category includes, but is not limited to, patients with the following conditions:

1. Human immunodeficiency virus (HIV)
2. Severe combined immunodeficiency (SCIDS)
3. Neutropenia
4. Immunosuppression
5. Sickle cell anemia
6. Status post splenectomy
7. Chronic steroid usage
8. Lupus erythematosus
9. Diabetes
10. Status post organ transplantation

Consultation with the child's physician is recommended for management of patients with a compromised immune system. Discussion of antibiotic prophylaxis for patients undergoing chemotherapy, irradiation, and hematopoietic cell transplantation appears in a separate American Academy of Pediatric Dentistry (AAPD) guideline (see the National Guideline Clearinghouse [NGC] summary Guideline on Dental Management of Pediatric Patients Receiving Chemotherapy, Hematopoietic Cell Transplantation, and/or Radiation).

Patients with Shunts, Indwelling Vascular Catheters, or Medical Devices

The AHA recommends that antibiotic prophylaxis for nonvalvular devices, including indwelling vascular catheters (central lines), is indicated only at the time of placement of these devices in order to prevent surgical site infection. The AHA found no convincing evidence that microorganisms associated with dental procedures cause infection of nonvalvular devices at any time after implantation. The infections occurring after device implantation most often are caused by staphylococci, Gram-negative bacteria, or other microorganisms associated with surgical implantation or other active infections. The AHA further states that immunosuppression is not an independent risk factor for nonvalvular device infections; immunocompromised hosts who have those devices should receive antibiotic prophylaxis as advocated for immunocompetent hosts. Consultation with the child's physician is recommended for management of patients with nonvalvular devices.

Ventriculoatrial (VA) or ventriculovenous (VV) shunts for hydrocephalus are at risk of bacteremia-induced infections due to their vascular access. In contrast, ventriculoperitoneal (VP) shunts do not involve any vascular structures and, consequently, do not require antibiotic prophylaxis. Consultation with the child's physician is recommended for management of patients with vascular shunts.

The AAPD endorses the recommendations of the American Dental Association and the American Academy of Orthopedic Surgeons for management of patients with prosthetic joints. Antibiotic prophylaxis is not indicated for dental patients with pins, plates, and screws, nor is it indicated routinely for most dental patients with total joint replacements. Antibiotics may be considered when high-risk dental procedures (Table 2 below) are performed for patients within 2 years following implant surgery or for patients who have had previous joint infections. Consultation with the child's physician may be necessary for management of patients with other implanted devices (e.g., Harrington rods, external fixation devices).

Table 1. Cardiac Conditions Associated with the Highest Risk of Adverse Outcome from Endocarditis for which Prophylaxis with Dental Procedures Is Reasonable
Prosthetic cardiac valve or prosthetic material used for cardiac valve repair
Previous infective endocarditis
Congenital heart disease (CHD)*
Unrepaired cyanotic CHD, including palliative shunts and conduits
Completely repaired congenital heart defect with prosthetic material or device, whether placed by surgery or by catheter intervention, during the first 6 months after the procedure**
Repaired CHD with residual defects at the site or adjacent to the site of a prosthetic patch or prosthetic device (which inhibit endothelialization)
Cardiac transplantation recipients who develop cardiac valvulopathy

* Except for the conditions listed above, antibiotic prophylaxis is no longer recommended for any other form of CHD.

** Prophylaxis is reasonable because endothelialization of prosthetic material occurs within 6 months after the procedure.

Circulation 2007; 116:1745.

Table 2. Dental Procedures for which Endocarditis Prophylaxis Is Reasonable for Patients in Table 1
All dental procedures that involve manipulation of gingival tissue or the periapical region of teeth or perforation of the oral mucosa* * The following procedures and events do not need prophylaxis: routine anesthetic injections through noninfected tissue, taking dental radiographs, placement of removable prosthodontic or orthodontic appliances, adjustment of orthodontic appliances, placement of orthodontic brackets, shedding of deciduous teeth, and bleeding from trauma to the lips or oral mucosa.

Circulation. 2007; 116:1746.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

All clinical guidelines are based on 2 sources of evidence: (1) the scientific literature; and (2) experts in the field.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Prevention of post-procedural bacteremia in dental patients at risk

POTENTIAL HARMS

- Antibiotic usage may result in the development of resistant organisms
- Risk of antibiotic-associated adverse events

CONTRAINDICATIONS

CONTRAINDICATIONS

Cephalosporins should not be used in an individual with a history of anaphylaxis, angioedema, or urticaria with penicillins or ampicillin.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

IMPLEMENTATION TOOLS

Chart Documentation/Checklists/Forms
Resources

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

American Academy of Pediatric Dentistry Clinical Affairs Committee, American Academy of Pediatric Dentistry Council on Clinical Affairs. Guideline on antibiotic prophylaxis for dental patients at risk for infection. Pediatr Dent 2008-2009;30(7 Suppl):215-8. [17 references] PubMed

ADAPTATION

The American Academy of Pediatric Dentistry acknowledges, endorses, and cites the American Heart Association's guideline "Prevention of infective endocarditis: Guidelines from the American Heart Association," *Circulation* e-published April 19, 2007, available at: http://circ.ahajournals.org/cgi/reprint/CIRCULATIONAHA.106.183095.

DATE RELEASED

2002 (revised 2008)

GUIDELINE DEVELOPER(S)

American Academy of Pediatric Dentistry - Professional Association

SOURCE(S) OF FUNDING

American Academy of Pediatric Dentistry

GUIDELINE COMMITTEE

Clinical Affairs Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Not stated

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Council members and consultants derive no financial compensation from the American Academy of Pediatric Dentistry (AAPD) for their participation and are asked to disclose potential conflicts of interest.

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GUIDELINE AVAILABILITY

Electronic copies: Available from the American Academy of Pediatric Dentistry Web site.

Print copies: Available from the American Academy of Pediatric Dentistry, 211 East Chicago Avenue, Suite 700, Chicago, Illinois 60611.

AVAILABILITY OF COMPANION DOCUMENTS

Information about the American Academy of Pediatric Dentistry (AAPD) mission and guideline development process is available on the AAPD Web site.

The following implementation tools are available for download from the AAPD Web site:

- Dental growth and development chart
- American Academy of Pediatric Dentistry Caries-Risk Assessment Tool (CAT)

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI on August 18, 2005. This NGC summary was updated by ECRI Institute on June 8, 2009. The updated information was verified by the guideline developer on July 14, 2009.

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